

Investigation of Seismic Activity on Radon Levels in Residential Housing in Sweden

**Change a life, change a Community
by bringing
people, communities, and technology together**



IoT Cloud Platform monitoring the environment: Air, Water, and Soil Quality



Air Quality



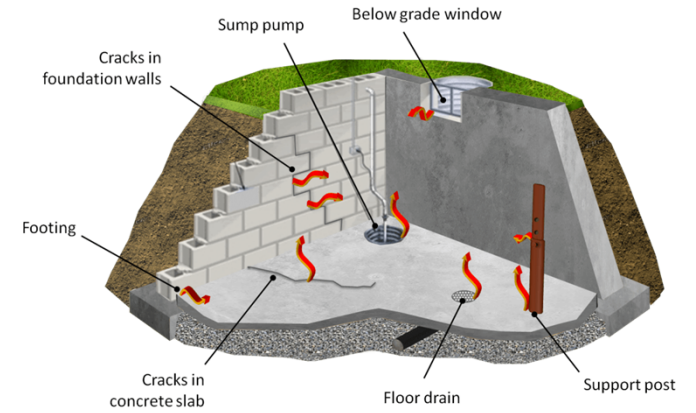
Water Quality



Soil Quality



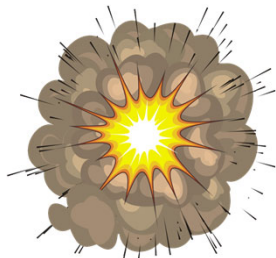
Phase 1 Seismic Activity and Radon Gas



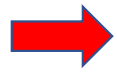
Construction



Mining



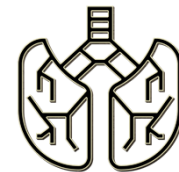
Blasting



Seismic Activity



Radon Gas



Lung Cancer



Over 500 deaths in Sweden each year attributed to Radon

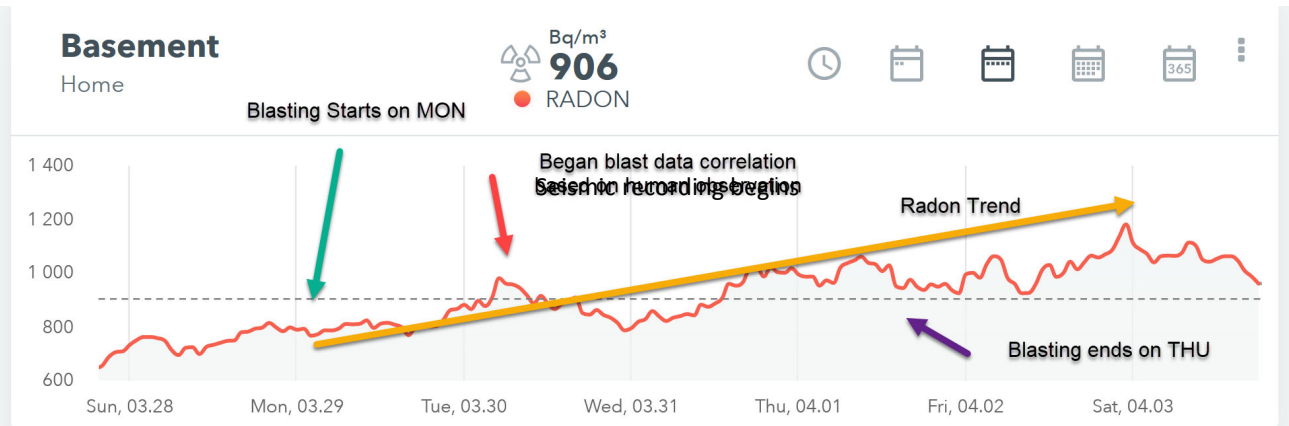
Air Quality Web Portal

Basement

Home
Last synced: 4 minutes ago

Plus 100%

Bq/m ³ 24h avg 957 RADON	ppb 88 VOC	ppm 452 CO ₂
31% HUMIDITY	23° TEMP	1013 PRESSURE

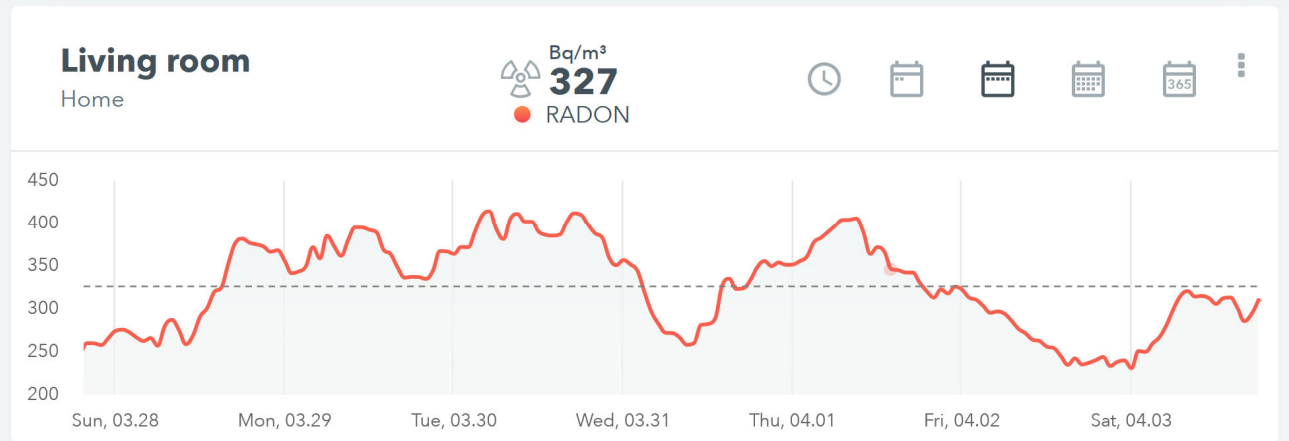


Living room

Home
Last synced: 2 minutes ago

Plus 100%

Bq/m ³ 24h avg 310 RADON	ppb 116 VOC	ppm 561 CO ₂
22% HUMIDITY	24° TEMP	1012 PRESSURE

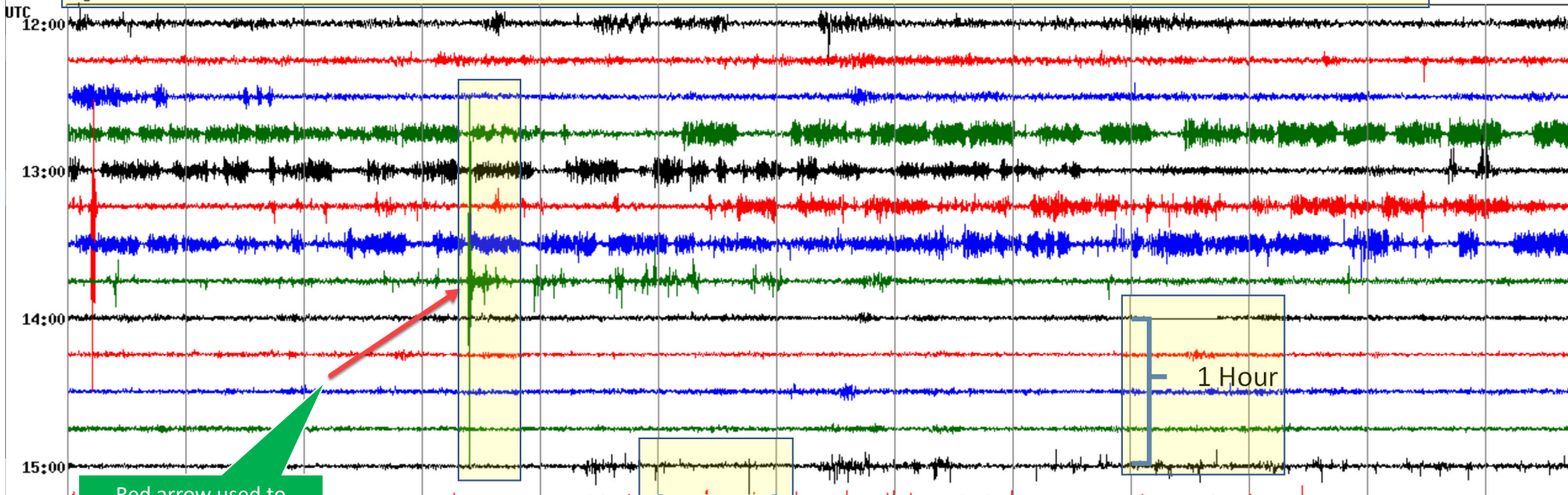


Seismometer R16A4 4D
2021-03-30 FRI Z-Axis (Vertical)
Sensor: Geophone

Seismograph from Web Portal

Mar 30, 2021
R16A4 EHZ AM 00
(nyShake)

Seismograph Information (Date, Seismometer ID, Axis, 12-Hour Segment, Seismometer Name)



Red arrow used to indicate blast event

Blast Event

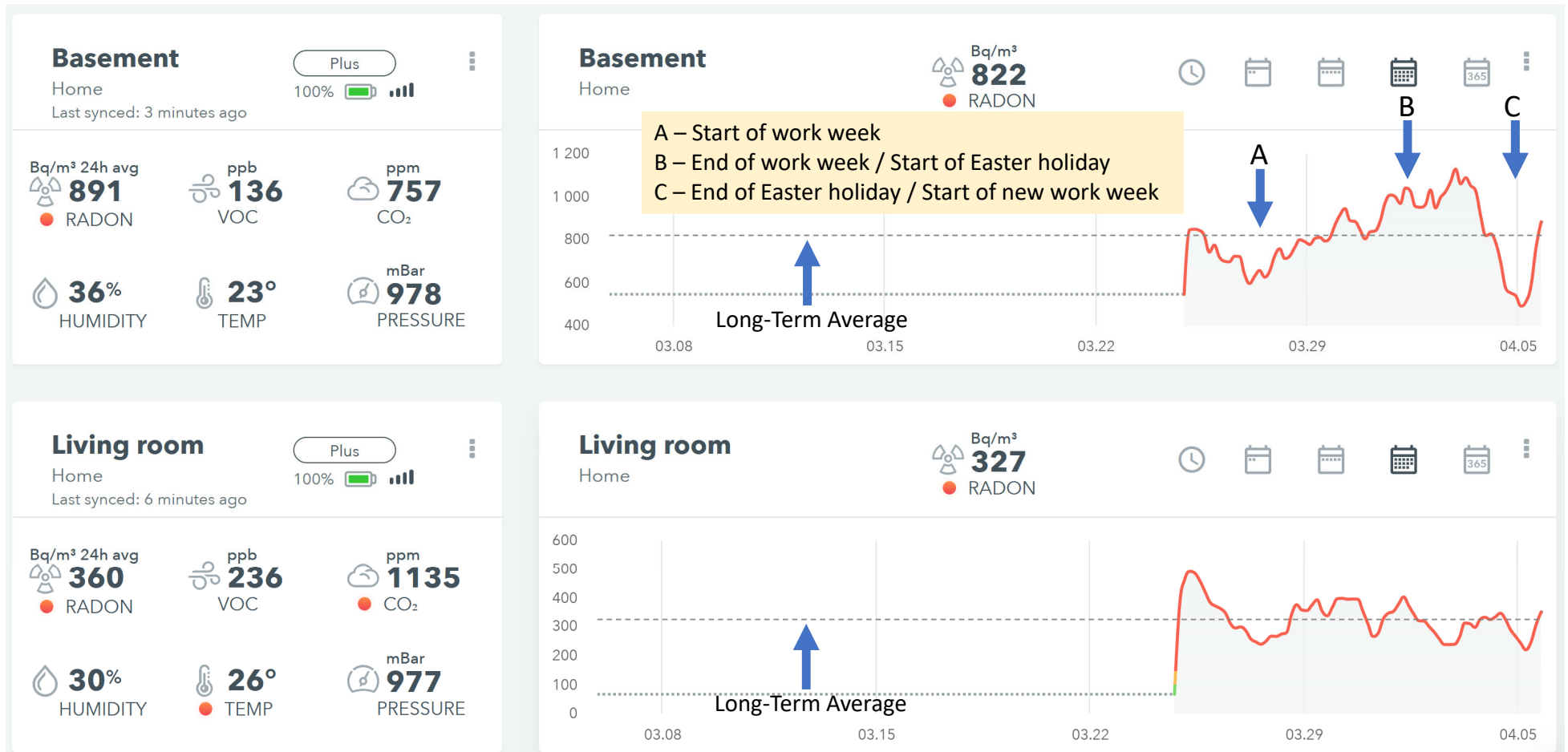
60 Seconds
(1 Minute)

1 Hour

Promoting Open Science and Open Data

Our research is part of a global Citizen Science initiative to collect seismic readings from around the world and make the raw data available to anyone for their own analysis for free.

Tracking Radon Levels and Seismic Activity



Radiation Levels Recorded following strong blasting events exceeded 1000 Bq/m³ and 1.000 μSv/Hr



= 24 X



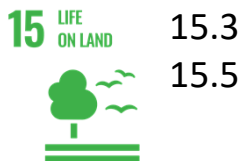
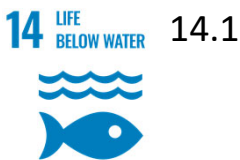
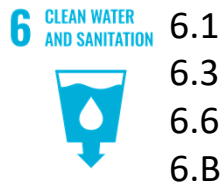
Outcome: Construction company was persuaded by the data to change how they conducted blasting resulting in lower seismic impact on the ground and a lowering of Radon gas levels.

IoT Cloud Platform monitoring
Air, Water, and Soil Quality

Revenue from Platform as a Service
(PaaS) and data aggregation and
publishing services



Affordable
solution for
disadvantaged
communities



Target audience is
disadvantaged
communities,
schools, educators,
and students



Technology and
knowledge transfer

Students earn
valuable STEM
skills

Communities own
their sensors and
data – transparent
data collection
independent of
special interests



Communities have proof of industry
and government compliance and
noncompliance

Builds trust between
local communities,
government, and
industry





Department of
Computer and
Systems Science

PhD Students



Donald Baldwin, M.Sc.
Lead Researcher
Enterprise Architect
Portfolio Manager



MSc Students



Fatima Bayloun
ICT Digital Business Analyst



Alexander Taschke
ICT Security and
Full Stack Developer



Daniel Andersson
Full Stack Developer and
Hardware Platform Developer



Sanne Tottras
Business Analyst



Michaela Svennas
Business Analyst



Applied Research
Enterprise
Systems
Architecture
Laboratory

ICT Project Support



Caramon Stanley
Security Architect
Programmer Analyst
Full Stack Developer
Hardware Platform Developer
Cyber-TSCM Consultant



- ICT Security
- ICT Cloud Security
- Cryptography

Contact

Donald Baldwin, M.Sc. (Doctoral Candidate)

- Phone: +46 733 759 760
- don.baldwin@dsv.su.se
- don.baldwin@aurenav.com
- <https://www.linkedin.com/in/donbaldwin/>